AMERICAN ANNALS

OF

The Deaf,

EDITED BY

EDWARD ALLEN FAY,

UNDER THE DIRECTION OF

J. WILLIAMS, OF CONNECTICUT, R. MATHISON, OF ONTARIO, R. O. JOHNSON, OF INDIANA, J. E. RAY, OF KENTUCKY, AND A. L. E. CROUTER, OF PENNSYLVANIA,

Committee of the Conference of Superintendents and Principals of American Schools for the Deaf.

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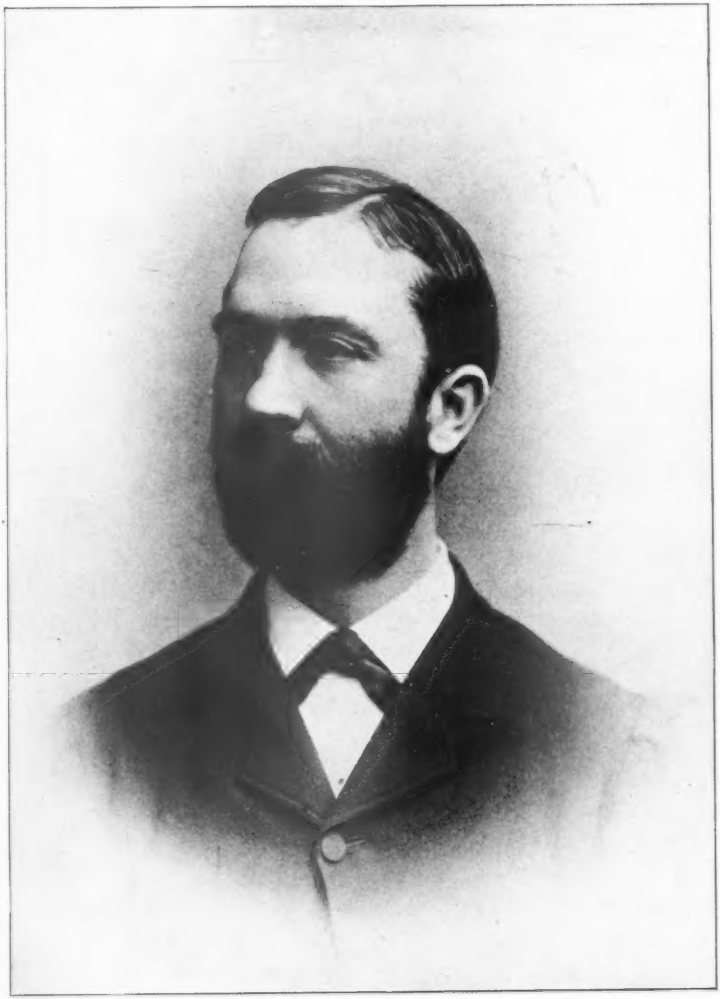

AMERICAN ANNALS OF THE DEAF.

VOL. XLI, No. 4.

JUNE, 1896.

WILLIAM GURNEY JENKINS.

DURING the period now bordering on eighty years since the noble work of teaching the deaf in this country first began, it has been richly blessed of God by the judicious and self-sacrificing labors of a great many forceful, earnest, and devoted men and women. Among these the late William Gurney Jenkins held a high and worthy place. In his untimely death the Hartford School for the Deaf has lost an efficient instructor, the whole profession an able co-worker, and the deaf everywhere both an earnest champion and a faithful friend.

He was only in the forty-seventh year of his age and had but just completed twenty years of service in this field of work when the summons came, yet he had become well known throughout the profession by the vigor and grace of his pen. His articles in the *Annals* during the last ten years and more revealed a man of keen intellect, copious and exact vocabulary, clear and forcible style, strong convictions, and fearless heart. He quailed before no manner of foe and declined no gage of battle. "Stand firm for the right and no surrender," may be regarded as his watchword in every controversy. On the question of methods his position may be defined as conservatively radical, for he was resolved not only to hold fast that which past and present experience has proved to be good,

but also to welcome and adopt that which in varying degree has been rendered practicable and useful by the wider opportunities of recent years.

For the inglorious occupation of fighting men of straw he had no taste, but in a good fight with a real antagonist he delighted to try conclusions. Though his rapier was sharp, its point was not poisoned. The thrust that deftly pierced some weak point in an opponent's armor was aimed by a true knight, who would not demean himself and his cause by bandying such scurrilous epithets as are the last resort of a common mind.

But the products of his pen were by no means limited to subjects of a militant nature. They often included the results of close observation and careful study by an acute and discerning mind. Besides more elaborate articles prepared for the *Annals*, or to be read in Convention, he was in the habit of writing less formal communications for the weekly deaf-mute press. These contributions, humorous, sentimental, polemical, or practical, as occasion required, were dashed off and signed "Gurney." Serious composition he sometimes affirmed to be for him a difficult task. It is certain that what was such a pleasure to read did not leave his hand without frequent previous revision. His writing was generally carried on with his children playing around him, and the noise never seemed to disturb him. His book entitled "Talks and Stories," prepared for deaf children, has had a large sale.

Since Mr. Jenkins' death some of those who intimately knew him have been surprised to learn that he sometimes gave expression to his thoughts in verse. Most of these productions were written in celebration of family anniversaries or to accompany some little gift to an intimate friend, but several are of real literary merit. He kept up his knowledge of Latin, read French with facility, and was especially interested in the study of language, history, and psychology. He was an eager observer of the successive steps in the mental growth of his own and other children.

It was not with observation that this clear-sighted friend of the deaf entered upon his work. There may not have been at first a very marked indication of the high place he was to attain both as a teacher and as a champion of the deaf. A certain degree of success, however, in any sphere of work may safely be predicted for any one who, in addition to the possession of a high moral purpose and a resolute will, has behind him a youth-time of struggle and the pre-natal blessing of a sturdy and godly ancestry.

Mr. Jenkins was born in Wales, at Dowlais, near Merthyr Tydvil, August 20, 1848. The rugged scenery of the little principality whose children have been in the forefront of heroic and splendid achievement in every part of the world could have had little if any influence upon him, for when William, the fifth of ten children, was but two years of age the family moved to Witton Park, near Bishop Auckland, Durham. Here, doubtless, much of the home-talk was carried on in the Welsh language, for William acquired enough knowledge of it to be able to read it and converse in it. I have not infrequently heard him alone in his school-room at recess give his buoyant feelings expression by singing snatches of some Welsh song. At my request his brother, Rev. John M. Jenkins, of New London, Penn., has furnished me with some interesting facts pertaining to William's early life. He writes: "The most potent factor next to the grace of God in shaping our lives was the influence of a godly mother. She belonged to the Welsh Presbyterian church, into which all the children were born and all but two were baptized. From early life my brother had shown great aptitude for teaching. Hence at the age of thirteen he became a pupil-teacher in Government schools at a small remuneration. This pupil-teachership was a kind of apprenticeship intended as a preparation for entrance into a college, with the view of becoming in turn the head

master or superintendent of a school. A course of study was mapped out for the five years of apprenticeship, in which a rigid examination was to be passed at the end of each year. From a child he delighted to serve others. He lived for others more than for himself. He always loved work. He was never known to do anything by halves. What he did, he did with his might. He was one of a band of young men who formed a Mutual Improvement Society for the study of such books as Butler's Analogy. Several of these are to-day occupying positions as ministers of the gospel in England."

During this time of pupil-teachership William attended the Episcopal church, in accordance with the rules governing that position, and he received confirmation at the hands of the Bishop of Durham. His clear voice caused him to be chosen a choir-boy.

In December, 1868, being then twenty years of age, he came with his brother John to Cleveland, Ohio, whither their father had preceded them. Within less than a year, in the fall of 1869, he entered Western Reserve College, and proved himself a faithful and painstaking student. To work his way through cost him hard work, for his parents were only in moderate circumstances. He graduated in the spring of 1874, taking the second honor in his class, and his salutatory address in Latin was a eulogy on President Hitchcock, who had died during the year. While in college he spent one or two summer vacations as a colporteur in Kentucky, carrying a supply of Bibles and religious books to be disposed of by sale or gift as circumstances seemed to require. Riding from place to place and entering rude cabins, he accepted such limited accommodation and plain fare as the hospitable occupants could furnish, sometimes sharing at night the only sleeping room with the parents and their flock of children; holding social meetings wherever he could gather a few persons together; also ministering words of comfort to the sick, and performing the last rites over the dead.

In September, 1874, he entered Lane Theological Seminary, Cincinnati, Ohio, with the view of becoming a minister in the Presbyterian church. But he was already suffering from a catarrhal affection of the throat akin to hay-fever, from which he was destined to suffer intensely almost every succeeding year of his life. This so affected his voice as to compel him to fear that he might have to take up some other calling—a fear upon which he had often opened his mind to President Cutler, of Western Reserve. Just at this time the hand of Providence seemed to point him to the work of teaching the deaf. Principal Caruthers of the Arkansas School was struggling under the burden of failing health, and appealed to his friend President Cutler to send a young man to his help. He fixed upon W. G. Jenkins and advised him to go, assuring him that it was a missionary field in which any man might feel it an honor to labor. So, in February, 1876, Mr. Jenkins left Lane Seminary and began at Little Rock the work that was to absorb his best energies for the rest of his life, his single knowledge of methods being an acquaintance with the two-hand alphabet learned years before from a deaf playmate.

Entering with ardor this new sphere of work, he soon became a proficient sign-maker, and on the death of Mr. Caruthers, which occurred the following September, Mr. Jenkins was placed at the head of the school. Meanwhile, in the summer of 1876, he had married Miss Lillie Heath, of Cleveland, Ohio, and a visit to the Centennial Exhibition constituted their wedding trip. The air at the South, however, did not agree with him, for he became subject to congestive chills. While attending the Ninth Convention, at Columbus, in August, 1878, he read a paper on "Pestalozzi and his Methods," and there made an engagement with Principal Foster, of the Pennsylvania Institution, to become a teacher under him. For Mr. Foster he always felt the highest regard, and named one of his sons

after him, while among the teachers of that school he made friendships that were always cherished. In October, 1885, he became a teacher in the American School for the Deaf at Hartford, Conn., where he readily adapted himself to new surroundings and to the use of methods somewhat divergent from those with which he had become familiar. His career of almost eleven years in this school was one of perceptible progress from year to year, and he stood in the front rank as an efficient teacher. To a natural love of teaching he added a tender, personal interest in the unfortunate. He worked with an energy that seemed tireless and an enthusiasm that the most indifferent pupil could not resist. It need hardly be said that Mr. Jenkins was a thorough believer in and a fearless advocate of the Eclectic System. Towards speech for the deaf he was not simply tolerant but earnestly friendly. A large part of his class-room work was conducted orally or by speech, accompanied by signs or manual spelling. In his chapel expositions of sacred truth, his forceful signs were an index of his own vigorous mind and an exponent of the hold which that truth had upon his own heart.

As a preacher, for he frequently accepted invitations to that form of service, he was clear, earnest, and winning. Much of that service was done without pecuniary reward, and at the cost of considerable personal inconvenience. For the little church at Sunset, Deer Isle, Maine, where he was in the habit of spending his summer vacations, he gladly did what he could, and about two years before his death obtained ordination by the Westchester Presbytery of New York that he might be duly qualified to administer all the Christian ordinances among the people there. There is indeed reason to fear that intensity of thought and action too rapidly exhausted his vital forces and left him an easy prey to disease when once it fastened itself upon him.

In the summer of 1894 he was persuaded to take a trip to Europe. From this he anticipated great pleasure, but

the charm that had lingered in memory around once familiar places was gone, for many of the friends of youth had departed, while ill-health and separation from his own family detracted from the enjoyment of the trip.

Mr. Jenkins' social qualities endeared him to all his associates in labor. Hopeful, cheery, courageous, he met the ills of life with fortitude. When, in June, 1895, it became necessary that he should submit to a serious surgical operation, he calmly set his house in order and was cheerful to the last moment. From that ordeal, through the skill and care of surgeon and nurse, his recovery was so speedy and thorough that he had reason to hope for many years of further usefulness. Indeed, he had little or no idea during his last sickness that it would terminate fatally, for on one occasion, when his wife's face betrayed her fears, he bade her be hopeful, saying, "If God had wished to take me, he would have taken me last June. I feel sure that he has work yet for me to do."

The bronchial attack to which from the first he found it hard to submit, he tried to consider of little account compared with the claim his work had upon him, but it fastened itself on him more persistently till pneumonia supervened and the end was near. Towards midnight of Tuesday, March 3d, he entered into rest, leaving, besides his wife, three sons, respectively seventeen, thirteen, and nine years of age. The little daughter whose presence had brought a flood of sunshine was called away a year before his own departure.

The words of just eulogy spoken at the funeral service by Rev. J. H. Twichell, of the Asylum Hill Congregational Church, which Mr. Jenkins and his family had attended since coming to Hartford, found a loving response in the hearts of the pupils, teachers, and officers of the school, all of whom were present. The sincere regrets spoken by friends and neighbors; the resolutions passed by the Salem Society of the Deaf, to which, as well as to the

Boston Society, he took his turn in ministering the gospel at stated times; and the numerous tributes of respect for his gifts of mind and heart that found spontaneous expression in periodicals for the deaf throughout the land, indicate the place he held in the esteem of those who knew him. To those nearest and dearest he has left the priceless legacy of a good name; to all that knew him, a record of probity, fidelity, and noble purpose; and to the deaf, for whom he labored with unstinted self-devotion, an unswerving and courageous advocacy of what he believed to be for their highest good—an advocacy the value and sincerity of which they were quick to admire.

ABEL S. CLARK,
Instructor in the American School at Hartford, Connecticut.

A VISIT TO THE CHICAGO MANUAL TRAINING SCHOOLS.

THIS visit was made last November. I do not pretend to give more than a general sketch of the most prominent features of the schools. The instruction given to such large numbers is made possible by rotation of classes.

English High and Manual Training School, West Side; H. R. Robinson, superintendent; a public school for boys; attendance, four hundred; average age, fifteen and a half years; time given to manual instruction, two hours per day. This school has been in operation about five years, and is rather a growth than one that has been fitted up all at once. According to grade, its equipment is second to none in the country, its tools and machinery having cost no less than thirty thousand dollars.

As I was guided through by Superintendent Robinson, I was filled with admiration at the orderly arrangement and the marked attention bestowed on every needed detail.

In the wood-working room, with benches for the accommodation of seventy-four boys, were a large number doing work which consisted of instruction in how to use the plane and the saw, to sharpen and care for tools, to measure, to join, and to apply working drawings according to specified measurements and manner of construction. In the wood-turning room, where some twenty boys were working, it was intensely interesting to watch with what precision and neatness they held their chisels to the revolving wood and soon turned out beautiful forms from ungainly blocks. In the foundry were a great variety of patterns, and several moulds were just then ready to receive some molten brass that was being taken from the furnace. The blacksmith shop was provided with twenty-four forges and a steam-hammer. Here on the anvils were different pieces of iron or steel being welded into shape. Thus, for the first time in my life, I had an opportunity to see in a school-house a splendid illustration of brain and brawn going hand in hand in obedience to the will.

In the machine shop were some thirty lathes, and there could be seen some of the most difficult and finely executed work of the school, in the form of screw-cutting, filing, chipping, and inlaying.

The designing and drafting department presented a most interesting study of theoretical, surface, and construction drawings, both architectural and mechanical. I must not omit to state that seven boys from the West Side Chicago Day-School for the Deaf are taking their places with the rest here in joinery and wood-turning.

Nothing in the above school is made to sell, and what cannot be made use of is given to the boys. They make some of their own tools and simple machinery, such as wood-turning lathes, and do most of the repairing. A small steam-engine was also seen that had been made in the school.

Jewish Training School, 91 Judd street; G. Bamberger,

superintendent; attendance, nine hundred; time given to manual instruction, from about two to three hours a week.

This is not an establishment to perpetuate Jewish institutions, either religious or social; but to turn the Jew against what the authorities term "the corrupted language, wretched surroundings, and abominable pedagogical methods of the 'Cheder,' and to counteract his intense intellectual tendencies, his bias for petty mercantile pursuits, and his indifference to manual labor," which they declare cannot be done by the public schools. It thus aims to raise the Jew to a higher social plane and to more profitable and dignified employment by imparting to him manual and technical skill which will broaden his opportunities and finally Americanize him.

The school begins manual training in the kindergarten, and carries it far enough to reveal in the children of the highest classes, who could not be much under fifteen or sixteen, "the vocation in life for which they are by nature best endowed." It would be impossible without a more thorough examination of the kindergarten department to even begin to tell of the great variety and excellence of the work done in that line.

Next, the children, boys and girls, eight years and under, do work in sloyd, making wall-brackets with the use of the saw, plane, and rule on benches that can be raised or lowered to suit the worker. After this course is completed, the boys and girls separate, the former going to the wood-working room and the latter to the sewing-room.

According to their ages, the boys, with the aid of working drawings and such tools as the knife, hand-saw, plane, chisel, try-square, gauge, and gouge, make fancy boxes, carve and turn out joinery and inlaid work, miniature window-sashes and stairways, and many other articles.

In needlework the girls have, for beginning work, the running, basting, top-sewing, hemming, and back stitch,

and patching, darning, embroidery, and mending. In the third grade they begin drafting and cutting, taking each other's measures. The last step that is required of them is the making of their own graduating dresses without instruction. It may not be out of place here to state that they are expected to keep their own clothing in repair.

The amount and variety of drawing and especially clay modelling done here is surprising. There is no school in Chicago in which there is more freedom in art. Mr. Walter Fischel, who has charge of this branch, is a young man of rare ability. He has prepared with great care "A New Series of Plaster Cast Models," which are not only highly spoken of but are being introduced into other schools. To go any further I should be invading the Art Section, so I will leave the rest to Dr. Gillett, who is abundantly able to furnish information on that subject. No forging or machine work, so far as I know, is done in this school. I was too late to see the wood-turning room.

Chicago Manual Training School, Michigan avenue and Twelfth street; H. H. Belfield, director; a school for boys, maintained by leading business men of Chicago; attendance, two hundred and sixty-five; age of admission, fourteen; annual tuition fee, one hundred dollars.

This is a high-grade school, not differing materially from the high school above described, except that it has a very fully developed art department, in whose course are included free-hand drawing, modelling, and designing. I was shown a design for an engine that was in course of construction.

The drawing was done the first year, the pattern-making the second, and the casting and finishing the third. The construction of a clock to be placed on the front wall of the school is now under way. The design, patterns, and some of the castings were on exhibition, and altogether it looked like a very complicated piece of mechanism.

A look into the Armour Institute, though it is not a manual training school, was greatly enjoyed. Its organization is as follows: The technical college, in which are taught Mechanical, Electrical, and Chemical Engineering, Architecture, and Library Science; and the departments of Domestic Arts, Commerce, Music, and Kindergartens. It is thus a technical and normal school combined, in which the teaching of specialties is the chief object. It has a blacksmith shop and a well-equipped wood working and turning room, which are largely adjunct to its higher work. Most of my time was taken up in the millinery, dressmaking, and cooking classes. At the time I was in the "kitchen," the advanced class was taking a lesson in the preparation and baking of gold and angel cake, and boiling white soup. The practical work of this department may be comprehended under five heads: boiling, steaming, stewing, baking, and marketing. The class mentioned was to finish its course with a Christmas dinner of its own preparation and at as little cost as possible. A lady who graduated from this department a few years ago told me that her class was given only two dollars to get up a dinner for eight persons, which was easily done, to the satisfaction of all concerned.

That the profession may know upon what a magnificent scale the work of the Armour Institute is undertaken, it is only necessary to mention the fact that the equipment of the department of electricity and electrical engineering alone cost sixty-four thousand dollars.

I called to see Miss Mary McCowen's Oral Boarding-School in Englewood, in which very praiseworthy work in sloyd is being done. Drafting is carefully taught and applied in the shop. Besides this the boys do a great deal of repairing. Gardening for instruction and practice is pursued to some extent with much pleasure and profit. Among the things Miss McCowen said to me was: "Every-

thing the children do has some hand-work about it," and everything about the place bore witness to her words.

I very much regret that, for want of time, I was unable to inspect the Hyde Park schools, in which excellent manual training courses, of a primary character, in sloyd, are being followed out with encouragement and success.

In none of the manual schools is the teaching of a trade thought of, except that the Jewish school, which believes it is desirable to give trade instruction to its graduates, is seeking to found a school for that purpose.

All of the schools are of recent origin, the oldest, the Chicago Manual Training School, having been established in 1883. But since that time the germ then planted has brought forth good fruit. Manual training is fast being introduced into the schools of Chicago. The sum of twenty-five thousand dollars has only recently been appropriated for its still further extension. Everywhere throughout the country the idea is attracting attention, and is being taken up and discussed by school boards and educational and legislative bodies.

Having been for some time more or less interested in leather-working, I called at the manufacturing, embossing, pressing, etc., establishment of H. M. Rosenblatt & Co., 237 Monroe street, but, as it was rather late, the place was found closed for the day.

As there is a very general feeling that the industrial departments of our schools for the deaf need improving, I venture to say that the first thing in the direction of reform should be reorganization on a strictly manual training basis. This leaves but one main question for solution—How far shall manual training be carried before it is turned into industrial channels or trade teaching?—which I may consider in a future paper.

Before concluding I wish to acknowledge the great kindness of all connected with the schools visited, in affording every opportunity to secure whatever information was

desired. To Mr. and Mrs. Gallaher I feel particularly indebted for their kind entertainment, and to Mr. Gallaher, whose superior knowledge of the city greatly facilitated my tour of investigation.

WARREN ROBINSON,
Instructor in the Wisconsin School,
Chairman of the Industrial Section of the
Convention of American Instructors of the Deaf.

LET ALL THINGS BE DONE DECENTLY AND IN ORDER.

ONE of the most elegantly written articles it has been my good pleasure to read for many a day was the one by Miss Katharine Fletcher, of the Northampton School, in the January *Annals*, upon the subject of "Aim and Method in Language Teaching." Her choice use of the king's English, her evident conversance with the best writers in the language, and her convincing way of putting forth her opinions, all combined to give force to her argument and to make any who would assail it pause to consider.

And yet, to my mind, all this splendid power was wasted in the task she set herself of proving "the worse the better reason." After arguing pro and con (for she seemed to be doubtful herself as to whether the position she intended to take was tenable), Miss Fletcher finally stated her conclusion, as follows: "Let us give our older children as few exercises as possible with the avowed purpose of teaching English, but as much English as possible in the direct process of teaching literature."

One looking at this conclusion alone would have but a poor conception of Miss Fletcher's designs. Throughout the body of the article her tenets are made clearer. She bewails the fact that there is not time to give our pupils both the expression and the comprehension of language,

and therefore the expression must go to make room for the comprehension.

If she were talking of pupils who had already acquired a fair use of language, we might reluctantly agree with her; but she leaves us in no doubt here. Listen to the description of them by herself. Speaking of the unjustness of measuring a pupil's knowledge by his power of expressing himself in writing, she says, quoting Lowell,

> "In this, as in all things, a lamb among men,
> He goes to sure death when he goes to his pen."

Describing one of her pupils, she says he "dashes into language like a guerrilla and brings off captives at every foray. He subjects them all to his service, and *it frequently happens that they are put to do work that they had never done before.* [Italics mine.] * * * He started off helter-skelter, and in astonishing English, *full of the most egregious blunders*, reproduced the whole thing. * * * It is, undoubtedly, much easier to hand a boy a pencil and a piece of paper and *leave him to work out his own doom* than it is by kindly and sympathetic questioning to draw from him what he might never venture to offer of his own accord."

Now, if it were proposed to give such pupils simple English to read in the Third Reader or some little story book, and gradually lead them up as far as they could go by the close of their school life, it would be well. But no; she proposes to plunge *in medias res.* She says: "Let our libraries be stocked with simple and interesting juvenile literature. * * * These are the books that our boys and girls will read by themselves, but when they are with us it is our bounden duty to make them feel and see that there is something better than these." She wants them to behold "the fair scenes that Milton, Keats, and Tennyson would show them." The proposition is not to drill in reading and to advance gradually to a comprehension of the whole field of recorded knowledge; but she desires

the flock, in company with the teacher, as guide and shepherdess, to skirt all the hills of difficulty and "the weedy wilderness of Endymion," and to make directly for the tender grass of the occasional pastures "beside the still waters."

This, from my point of view, is to build the superstructure before the foundation—to endeavor to reap the harvest before the seed is sown.

Many who have become deaf after acquiring a comprehension of the force of words through the ear are susceptible to the keenest delight in the company of those whose poetic natures have given them spiritual insight; a much smaller number of congenitally deaf people have penetrated into the "holy of holies;" as to the far larger number of the latter, however, I hardly think the time ever comes when literature, as such, may be profitably taught them in a primary school, except at an immense loss in more important matters. In the grammar grades of the public schools little more is attempted along this line than the committing to memory of choice passages; and surely Miss Fletcher is not bold enough to hope that her burning enthusiasm and indomitable energy will avail to annihilate that terrible redoubt of deafness which bristles with its array of evils directly across her path.

I am reminded here of the visit of a certain superintendent to the school-room of a teacher of the deaf, whose soul was wrapped up in chemistry. The class was one of some five years' standing and, as might be inferred, was in its swaddling-clothes as to language. And yet here they were, teacher and pupils, with crayons and slates, readers and arithmetics consigned to oblivion, in the ecstatic delight of contemplating the mystery of chemical affinity. The remark of the superintendent was, "Mr. ——, I want this class taught chemistry, whenever they are ready for it, five, or six, or eight years, in the future. For the present they should be learning that a

predicate requires a subject and that a relative clause after a subject does not necessarily complete the sentence." The remark of the teacher to one of his associates was, "That's the way of it; as soon as a fellow is ready to get some pleasure out of his work, along comes some soulless superintendent and dashes his hope to the ground."

The burning question is not what is *pleasant* to teach, but what is *profitable*. Reading should surely be taught parallel with writing, but not necessarily reading of the poets. Such reading should be relegated to the future. When pupils can read with ease ordinary stories, novels, newspapers, histories, and biographies, then, and not till then, should any attempt be made to teach literature. An earlier attempt would be violating nature's course, "First the blade, then the ear, and then the full corn in the ear."

It might not be amiss here to call attention to the idea prevalent, even among teachers of the deaf, that looking through a book is reading it. Our pupils take books from the library, keep them a week, and return them "read" (?) They will probably volunteer the remark, "That book is dull." Now let some teacher skilled in signs tell the story of the book, and the same pupil sits in rapt attention. What is the explanation? Why, this: In the first case, he looked at the words but got no idea; in the second, he looked at the idea without the intervention of words.

No deaf person, certainly no congenitally deaf person, can read with any pleasure till every sentence presents a clear-cut, distinct idea. Miss Fletcher's *rara avis*, the boy who made forays into the realm of literature and brought back trophies, cannot be depended upon; as often as not he brings back a goat, or possibly an Irish bull, when he thinks he has a sheep.

Now, this perfection in reading may never be reached by an occasional ramble with the teacher through the fields of literature; it calls for faithful and persistent drill

both in reading and writing—one acting as the handmaid of the other—through long and weary years. Such a height being once attained, however, the world of letters lies at the feet of the climber, and he need ask no one to point out the beauties that are spread before him.

When Gibbon was studying French he proceeded as follows: Having first mastered the grammar and possessed himself of a fair vocabulary, he would, each day, select some choice piece of French and translate it into as good English as he could. Putting this translation away, he would wait till the French forms of the original piece had slipped from his mind and then retranslate it into French. In this way he became so perfectly at home in the language that when he was ready to write his great work he hesitated whether to use French or English, and only decided upon the latter because he thought it prevailed more widely. Now, if he had confined himself to reading alone, no such excellence would have crowned his efforts; it was the judicious blending of both reading and writing.

Gibbon, of course, brought to his work a trained mind and one or more languages, rich in the stores of generations, already learned; and yet, methinks, we may, bearing in mind the limitations of our pupils and the difficulties which surround them, lead them by similar methods to similar results.

D. C. DUDLEY,
Superintendent of the Colorado School, Colorado Springs, Colo.

AN INQUIRY CONCERNING THE RESULTS OF MARRIAGES OF THE DEAF IN AMERICA.*

Chapter III.

Marriages of the Congenitally Deaf and of the Adventitiously Deaf.

The third question proposed at the outset of this Inquiry was: Are certain classes of the deaf, however they may marry, more liable than others to have deaf children, and, if so, how are these classes respectively composed, and what are the conditions that increase or diminish this liability? In the present chapter the classes considered will be the congenitally deaf and the adventitiously deaf.

In the earliest discussions concerning marriages of the deaf the opinion was expressed that persons born deaf were more liable to have deaf offspring than those who became deaf at some period after birth from adventitious causes, and most of the statistics hitherto published have tended to confirm this opinion. In the present Inquiry, therefore, pains have been taken to ascertain as fully as possible whether the deaf partners in marriage were congenitally or adventitiously deaf.

In estimating the value of all statistics on this subject it should be remembered that in many cases the fact of congenital or adventitious deafness cannot be determined with certainty. Indeed, the fact of congenital deafness cannot be determined with absolute certainty in any case. At the moment of birth it is impossible to find out whether the power of hearing exists or not, though a few days later, probably, this can be ascertained by applying proper tests.†

* Continued from the April number of the *Annals*, page 183.

† See "Tests of Hearing in Infants," in "American Annals of the Deaf," Washington, 1890, vol. xxxv, p. 234.

Generally, the fact of deafness is not discovered until the child arrives at the age when children usually begin to talk; at that time it is impossible to say whether the deafness has existed from birth or has occurred at some subsequent period. If the child has suffered from some unmistakable disease that is known to be a frequent cause of deafness, the case is likely to be recorded as adventitious; it may possibly, however, have been congenital. If, on the other hand, no such disease has been observed, the case is likely to be recorded as congenital; but it is, perhaps, quite as likely that the hearing has been lost in consequence of some unnoticed inflammation of the mucous membrane of the tympanic cavity or of the air-passages occurring soon after birth, or at some subsequent time before the deafness was discovered.* Deafness truly congenital is probably of much rarer occurrence than is indicated by even the most trustworthy statistics, and the only adventitious cases of which we can be sure are those of persons of whom it is known that they have heard at some period of their lives. It is to be understood, therefore, that "congenitally deaf," as a rule, really means "supposed to be congenitally deaf," and that "adventitiously deaf," in some cases, means "supposed to be adventitiously deaf."

The 7,277 deaf persons whose marriage records are comprised in the present collection are classified as follows with respect to the congenital or adventitious character of their deafness:

* A. DE CANDOLLE, "Sur la Production par Sélection aux États-Unis d'une Race de Sourds-Muets," Geneva, 1886. L. TURNBULL, "Progress of Otology," in "Medical and Surgical Reporter," January 23, 1886.

TABLE XIII.

Deaf married persons.	Number.	Percentage.
Congenitally deaf	2,245	30.851
Adventitiously deaf	3,953	54.322
Deaf, whether congenitally or adventitiously unreported	1,079	14.827
Total	7,277	100.000

Regarding only the persons concerning whom the fact of congenital or adventitious deafness is reported, Table XIII gives:

TABLE XIV.

Deaf married persons.	Number.	Percentage.
Congenitally deaf	2,245	36.221
Adventitiously deaf	3,953	63.779
Total	6,198	100.000

Of 23,931 persons who attended American schools for the deaf up to the year 1890, 9,842, or 41 per cent., were reported as congenitally deaf, and 14,089, or 59 per cent., were reported as adventitiously deaf.* Comparing the percentages of Table XIV with these, it appears that the proportion of the congenitally deaf who married is smaller than that of the congenitally deaf who attended school, and that the proportion of the adventitiously deaf who married is larger than that of the adventitiously deaf who attended school. This difference is perhaps to be explained, in part at least, by the superior average education of the adventitiously deaf, the comparative facility with which they communicate with the hearing world, and

* See "School Statistics of the Deaf," in "Proceedings of the World's Congress of Instructors of the Deaf," Washington, 1893, p. 272.

their consequent more prosperous circumstances and greater ability to support a family.

The following table shows the number and percentage of the congenitally deaf classified with respect to their marriage to congenitally deaf partners, to adventitiously deaf partners, and to hearing partners, respectively:

TABLE XV.

Congenitally deaf married persons.	Number.	Percentage.
Persons congenitally deaf married partners congenitally deaf	746	33.229
Persons congenitally deaf married partners adventitiously deaf	1,029	45.835
Persons congenitally deaf married partners deaf, whether congenitally or adventitiously unreported	219	9.755
Persons congenitally deaf married hearing partners	261	11.626
Persons congenitally deaf married partners unreported whether deaf or hearing	88	3.919
Total*	2,245	104.364

The following table shows the number and percentage of the adventitiously deaf classified with respect to their

* Thirty-five congenitally deaf persons were married both to congenitally deaf and to adventitiously deaf partners; 12 were married both to congenitally deaf partners and to partners deaf, whether congenitally or adventitiously unreported; 1 was married to a congenitally deaf partner, twice to partners deaf, whether congenitally or adventitiously unreported, and twice to hearing partners; 12 were married both to adventitiously deaf partners and to partners deaf, whether congenitally or adventitiously unreported; 9 were married both to congenitally deaf and to hearing partners; 14 were married both to adventitiously deaf and to hearing partners; 7 were married both to partners deaf, whether congenitally or adventitiously unreported, and to hearing partners; 1 was married both to a hearing partner and to a partner unreported whether deaf or hearing; 3 were married both to congenitally deaf partners and to partners unreported whether deaf or hearing; 1 was married both to an adventitiously deaf partner and to a partner unreported whether deaf or hearing; 1 was married to a congenitally deaf partner, to an adventitiously deaf partner, and to a hearing partner.

marriage to congenitally deaf partners, to adventitiously deaf partners, and to hearing partners, respectively:

TABLE XVI.

Adventitiously deaf married persons.	Number.	Percentage.
Persons adventitiously deaf married partners congenitally deaf	1,023	25.879
Persons adventitiously deaf married partners adventitiously deaf	2,125	53.757
Persons adventitiously deaf married partners deaf, whether congenitally or adventitiously unreported	345	8.727
Persons adventitiously deaf married hearing partners	456	11.535
Persons adventitiously deaf married partners unreported whether deaf or hearing	152	3.845
Total*	3,953	103.743

From a comparison of the several classes of persons shown in Tables XV and XVI, it appears that a plurality of the congenitally deaf and a majority of the adventitiously deaf married adventitiously deaf partners, and that the

*Sixty adventitiously deaf persons were married both to congenitally deaf and to adventitiously deaf partners; 26 were married both to adventitiously deaf partners and to partners deaf, whether congenitally or adventitiously unreported; 26 were married both to adventitiously deaf and to hearing partners; 1 was married to an adventitiously deaf partner, to a hearing partner, and to a partner deaf, whether congenitally or adventitiously unreported; 6 were married both to adventitiously deaf partners and to partners unreported whether deaf or hearing; 8 were married both to congenitally deaf partners and to partners deaf, whether congenitally or adventitiously unreported; 1 was married to a congenitally deaf partner, to a partner deaf, whether congenitally or adventitiously unreported, and to a partner unreported whether deaf or hearing; 10 were married both to congenitally deaf partners and to hearing partners; 3 were married both to congenitally deaf partners and to partners unreported whether deaf or hearing; 3 were married both to hearing partners and to partners deaf, whether congenitally or adventitiously unreported; 1 was married both to a partner deaf, whether congenitally or adventitiously unreported, and to a partner unreported whether deaf or hearing; 1 was married both to a partner unreported whether deaf or hearing and to a hearing partner.

proportion of each class that married hearing partners was nearly equal.

Regarding only the marriages in which both of the partners were deaf and concerning which the fact of congenital or adventitious deafness is reported, Tables XV and XVI give the two tables following:

TABLE XVII.

Congenitally deaf married persons.	Number.	Percentage.
Persons congenitally deaf married partners congenitally deaf	746	42.898
Persons congenitally deaf married partners adventitiously deaf	1,029	59.172
Total*	1,739	102.070

TABLE XVIII.

Adventitiously deaf married persons.	Number.	Percentage.
Persons adventitiously deaf married partners congenitally deaf	1,023	33.128
Persons adventitiously deaf married partners adventitiously deaf	2,125	68.811
Total†	3,088	101.939

It is interesting to compare the percentages of Tables XVII and XVIII with the conclusions reached a few years ago from an attempt to determine the relative proportions of the same classes of persons by "the theory of probabilities." When Dr. Bell was preparing his "Memoir upon the Formation of a Deaf Variety of the Human Race," he desired to ascertain what proportion of the congenitally deaf married congenitally deaf partners, but

*Thirty-six congenitally deaf persons were married both to congenitally deaf and to adventitiously deaf partners.

†Sixty adventitiously deaf persons were married both to congenitally deaf and to adventitiously deaf partners.

could obtain no satisfactory statistics on that point. It occurred to him that some light might be thrown upon the subject by "the theory of probabilities." He therefore submitted the question to a distinguished mathematician, who agreed with him in this idea, and presented the following conclusions as the probable solution of the problem: (1) of the congenitally deaf who married deaf partners, one-half married congenitally deaf partners and one-half married adventitiously deaf partners; (2) of the adventitiously deaf who married deaf partners, three-sevenths married congenitally deaf partners and four-sevenths married adventitiously deaf partners.* The difference in the results of "the theory of probabilities" and those of the present Inquiry is probably chiefly due to the former having been based upon a smaller number of cases, in which the disparity in the proportions of the congenitally deaf and the adventitiously deaf was less than in these statistics.

Following the same order of inquiry as in the preceding chapters, let us first compare the productiveness of the marriages of the congenitally deaf and of the adventitiously deaf.

The following table includes all the marriages of a year's standing or longer, of which the results have been reported, classified according to the congenital or adventitious character of the deafness of the partners in marriage. It shows the number of marriages of each class, and the number and percentage of them that were without offspring:

*S. Newcomb, in Dr. Bell's "Memoir upon the Formation of a Deaf Variety of the Human Race," in "Memoirs of the National Academy of Sciences," Washington, 1884, vol. ii, pp. 261, 262; Reprint, Washington, 1884, pp. 85, 86. Professor Newcomb's conclusion was based upon the marriages of 629 deaf persons, of whom 298 were reported as congenitally deaf and 331 as adventitiously deaf. He made allowance "for a probable slight tendency of the two classes, congenital and non-congenital, to choose each other."

TABLE XIX.

Marriages of the deaf.	Number of marriages.	Marriages without offspring.	
		Number.	Percentage.
Both partners congenitally deaf	335	55	16.418
One partner congenitally deaf; the other adventitiously deaf	814	127	15.602
One partner congenitally deaf; the other deaf, whether congenitally or adventitiously unreported	120	25	20.833
One partner congenitally deaf; the other hearing	191	21	10.995
One partner congenitally deaf; the other unreported whether deaf or hearing	17	2	11.765
Both partners adventitiously deaf	845	119	14.083
One partner adventitiously deaf; the other deaf, whether congenitally or adventitiously unreported	195	26	13.333
One partner adventitiously deaf; the other hearing	310	41	13.226
One partner adventitiously deaf; the other unreported whether deaf or hearing	48	3	6.250
Both partners deaf, whether congenitally or adventitiously unreported	68	7	10.294
One partner deaf, whether congenitally or adventitiously unreported; the other hearing	98	6	6.122
One partner deaf, whether congenitally or adventitiously unreported; the other unreported whether deaf or hearing	37	2	5.405
Total	3,078	434	14.100

Summing up all the marriages of the congenitally deaf, one or both of the partners being congenitally deaf, and all the marriages of the adventitiously deaf, one or both of the partners being adventitiously deaf, as shown in Table XIX, the following table shows the number of marriages of each class, and the number and percentage of them that were without offspring:

TABLE XX.

Marriages of the deaf.	Number of marriages.	MARRIAGES WITHOUT OFFSPRING.	
		Number.	Percentage.
One or both partners congenitally deaf	1,477	230	15.572
One or both partners adventitiously deaf	2,212	316	14.286

It appears from Tables XIX and XX that a slightly larger percentage of the marriages of the congenitally deaf were without offspring than of the marriages of the adventitiously deaf.

The following table shows the number of marriages of each class that resulted in offspring, the number of children born from the marriages of each class, and the average number of children to a marriage in each class:

TABLE XXI.

Marriages of the deaf resulting in offspring.	Number of marriages.	CHILDREN.	
		Number.	Average number to each marriage.
Both partners congenitally deaf	280	779	2.782
One partner congenitally deaf; the other adventitiously deaf	687	1,820	2.649
One partner congenitally deaf; the other deaf, whether congenitally or adventitiously unreported	95	248	2.610
One partner congenitally deaf; the other hearing	170	528	3.106
One partner congenitally deaf; the other unreported whether deaf or hearing	15	26	1.733
Both partners adventitiously deaf	726	1,720	2.369
One partner adventitiously deaf; the other deaf, whether congenitally or adventitiously unreported	169	378	2.237
One partner adventitiously deaf; the other hearing	269	713	2.651
One partner adventitiously deaf; the other unreported whether deaf or hearing	45	70	1.555
Both partners deaf, whether congenitally or adventitiously unreported	61	127	2.082
One partner deaf, whether congenitally or adventitiously unreported; the other hearing	92	291	3.163
One partner deaf, whether congenitally or adventitiously unreported; the other unreported whether deaf or hearing	35	82	2.343
Total	2,644	6,782	2.565

Summing up all the marriages of the congenitally deaf that resulted in offspring, one or both of the partners being congenitally deaf, and all the marriages of the adventitiously deaf that resulted in offspring, one or both of the partners being adventitiously deaf, as shown in Table XXI, the following table shows the number of marriages of each class, the number of children born from the marriages of each class, and the average number of children to a marriage in each class:

TABLE XXII.

Marriages of the deaf resulting in offspring.	Number of marriages.	CHILDREN.	
		Number.	Average number to each marriage.
One or both partners congenitally deaf....	1,247	3,401	2.727
One or both partners adventitiously deaf.	1,896	4,701	2.477

It appears from Tables XXI and XXII that the average number of children to each marriage was slightly higher in the marriages of the congenitally deaf than in those of the adventitiously deaf. This result, which is not what we should have expected from the larger percentage of marriages of the congenitally deaf that were without offspring, as shown by Tables XIX and XX, is perhaps due to the circumstance that the average duration of the marriages of the congenitally deaf here recorded was probably greater than that of the marriages of the adventitiously deaf, for a majority of the earlier pupils of American schools were congenitally deaf, while within recent years a majority of them have been adventitiously deaf.* In both the marriages without offspring and those resulting in offspring, the disparities in the results of the marriages of the congenitally and the adventitiously deaf are slight. We conclude that, while there is not much difference with respect to productiveness between marriages of the congenitally deaf and of the adventitiously deaf, the latter are probably slightly more productive.

We come now to the principal question to be considered in this chapter: Are marriages of the congenitally deaf more liable than marriages of the adventitiously deaf to result in deaf offspring?

*See "Deaf-Mutes: Proportion of Congenital and Adventitious Cases," in Buck's "Reference Handbook of the Medical Sciences," New York, 1886, vol. ii, p. 364.

In seeking an answer to this question, I shall pursue the same method as in the previous chapters, first regarding the 3,078 marriages of a year's standing or longer, of which the results have been reported, and ascertaining what number and percentage of each class resulted in deaf offspring; and, secondly, regarding the 6,782 children born from these marriages, and ascertaining what number and proportion of the children born from each class of marriage were deaf.

First, regarding the marriages, and classifying them with respect to the congenital or adventitious character of the deafness of the partners in marriage, the following table shows the number of marriages of each class, and the number and percentage of them resulting in deaf offspring (with or without other offspring):

TABLE XXIII.

Marriages of the deaf.	Number of marriages.	Marriages resulting in deaf offspring.	
		Number.	Per-centage.
Both partners congenitally deaf	335	83	24.776
One partner congenitally deaf; the other adventitiously deaf	814	66	8.108
One partner congenitally deaf; the other deaf, whether congenitally or adventitiously unreported	120	17	14.165
One partner congenitally deaf; the other hearing	191	28	14.660
One partner congenitally deaf; the other unreported whether deaf or hearing	17	.....	.....
Both partners adventitiously deaf	845	30	3.550
One partner adventitiously deaf; the other deaf, whether congenitally or adventitiously unreported	195	17	8.718
One partner adventitiously deaf; the other hearing	310	10	3.226
One partner adventitiously deaf; the other unreported whether deaf or hearing	48	1	2.083
Both partners deaf, whether congenitally or adventitiously unreported	68	7	10.294
One partner deaf, whether congenitally or adventitiously unreported; the other hearing	98	37	37.755
One partner deaf, whether congenitally or adventitiously unreported; the other unreported whether deaf or hearing	37	4	10.811
Total	3,078	300	9.746

Regarding next the children born from these marriages, the following table shows the number born from the several classes of marriage, classified according to the congenital or adventitious character of the deafness of the partners in marriage, and the number and percentage of deaf children born from the marriages of each class:

TABLE XXIV.

Marriages of the deaf.	Number of children.	DEAF CHILDREN.	
		Number.	Per-centage.
Both partners congenitally deaf	779	202	25.931
One partner congenitally deaf; the other adventitiously deaf.....	1,820	119	6.538
One partner congenitally deaf; the other deaf, whether congenitally or adventitiously unreported.....	248	29	11.694
One partner congenitally deaf; the other hearing.....	528	63	11.932
One partner congenitally deaf; the other unreported whether deaf or hearing	26	.....	.....
Both partners adventitiously deaf.....	1,720	40	2.326
One partner adventitiously deaf; the other deaf, whether congenitally or adventitiously unreported.....	378	23	6.085
One partner adventitiously deaf; the other hearing.....	713	16	2.244
One partner adventitiously deaf; the other unreported whether deaf or hearing.....	70	1	1.429
Both partners deaf, whether congenitally or adventitiously unreported.	127	16	12.598
One partner deaf, whether congenitally or adventitiously unreported; the other hearing.....	291	72	24.742
One partner deaf, whether congenitally or adventitiously unreported; the other unreported whether deaf or hearing.....	82	7	8.537
Total	6,782	588	8.670

Regarding only the marriages of the congenitally deaf, one or both of the partners being congenitally deaf, Table XXIII gives :

TABLE XXV.

Marriages of the congenitally deaf.	Number of marriages.	MARRIAGES RESULTING IN DEAF OFFSPRING.	
		Number.	Percentage.
Both partners congenitally deaf....	335	83	24.776
One partner congenitally deaf; the other adventitiously deaf	814	66	8.108
One partner congenitally deaf; the other deaf, whether congenitally or adventitiously unreported.....	120	17	14.165
One partner congenitally deaf; the other hearing.....	191	28	14.660
One partner congenitally deaf; the other unreported whether deaf or hearing.....	17	.....	.....
Total.....	1,477	194	13.135

Regarding the children born from the marriages of the congenitally deaf, one or both of the partners being congenitally deaf, Table XXIV gives:

TABLE XXVI.

	Number of children.	DEAF CHILDREN.	
		Number.	Per-centage.
Both partners congenitally deaf.....	779	202	25.931
One partner congenitally deaf; the other adventitiously deaf.....	1,820	119	6.538
One partner congenitally deaf; the other deaf, whether congenitally or adventitiously unreported.....	248	29	11.694
One partner congenitally deaf; the other hearing.....	528	63	11.932
One partner congenitally deaf; the other unreported whether deaf or hearing	26	.....	.....
Total.....	3,401	413	12.143

It appears from Tables XXV and XXVI that marriages of the congenitally deaf, whether they are married to one another, to adventitiously deaf partners, or to hearing partners, are very liable to result in deaf offspring; that marriages in which both of the partners are congenitally deaf are most liable to this result; that those in which one of the partners is congenitally deaf and the other a hearing person come next in order of liability; and that those in which the other partner is adventitiously deaf are least liable to result in deaf offspring.

Regarding only the marriages of the adventitiously deaf, one or both of the partners being adventitiously deaf, Table XXIII gives:

TABLE XXVII.

Marriages of the adventitiously deaf.	Number of marriages.	MARRIAGES RESULTING IN DEAF OFFSPRING.	
		Number.	Per-centage.
Both partners adventitiously deaf.....	845	30	3.550
One partner adventitiously deaf; the other congenitally deaf.....	814	66	8.108
One partner adventitiously deaf; the other deaf, whether congenitally or adventitiously unreported.....	195	17	8.718
One partner adventitiously deaf; the other hearing.....	310	10	3.226
One partner adventitiously deaf; the other unreported whether deaf or hearing	48	1	2.083
Total	2,212	124	5.606

Regarding the children born from the marriages of the adventitiously deaf, one or both of the partners being adventitiously deaf, Table XXIV gives:

TABLE XXVIII.

Marriages of the adventitiously deaf.	Number of children.	Deaf children.	
		Number.	Per-centage.
Both partners adventitiously deaf.....	1,720	40	2.326
One partner adventitiously deaf; the other congenitally deaf.....	1,820	119	6.538
One partner adventitiously deaf: the other deaf, whether congenitally or adventitiously unreported.....	378	23	6.085
One partner adventitiously deaf; the other hearing.....	713	16	2.244
One partner adventitiously deaf; the other unreported whether deaf or hearing	70	1	1.429
Total	4,701	199	4.233

It appears from Tables XXVII and XXVIII that marriages of the adventitiously deaf, whether they are married to one another, to congenitally deaf partners, or to hearing partners, are somewhat liable to result in deaf offspring; that the liability is greatest in marriages in which the other partner is congenitally deaf; and that those in which both of the partners are adventitiously deaf are slightly more liable to result in deaf offspring than those in which one of the partners is adventitiously deaf and the other a hearing person.

The totals of Tables XXV and XXVII show the marriages of the congenitally deaf and the adventitiously deaf, respectively, one or both of the partners being deaf, and the number and percentage of marriages of each class resulting in deaf offspring (with or without other offspring), as follows:

TABLE XXIX.

Marriages of the deaf.	Number of marriages.	MARRIAGES RESULTING IN DEAF OFFSPRING.	
		Number.	Percent'e.
One or both partners congenitally deaf	1,477	194	13.135
One or both partners adventitiously deaf	2,212	124	5.606

The totals of Tables XXVI and XXVIII show the number and percentage of deaf children resulting from marriages of the congenitally deaf and the adventitiously deaf, respectively, as follows:

TABLE XXX.

Marriages of the deaf.	Number of children.	DEAF CHILDREN.	
		Number.	Percent'e.
One or both partners congenitally deaf	3,401	413	12.143
One or both parners adventitiously deaf	4,701	199	4.233

It appears from Tables XXIX and XXX that a far larger proportion of the marriages of the congenitally deaf resulted in deaf offspring than of the adventitiously deaf, and that a far larger proportion of deaf children were born from the former than from the latter. The disparity in the percentages of the results of the two classes of marriages becomes still greater if we regard only the marriages in which the condition of both partners was reported, and omit the large number of marriages in which one of the partners was congenitally deaf and the other adventitiously deaf, as is shown in the two following tables:

TABLE XXXI.

Marriages of the deaf.	Number of marriages.	MARRIAGES RESULTING IN DEAF OFFSPRING.	
		Number.	Percentage.
One partner congenitally deaf; the other congenitally deaf or hearing.	526	111	21.103
One partner adventitiously deaf; the other adventitiously deaf or hearing	1,155	40	3.463
Total	1,681	151	9.458

TABLE XXXII.

Marriages of the deaf.	Number of children.	DEAF CHILDREN.	
		Number.	Percentage.
One partner congenitally deaf; the other congenitally deaf or hearing.	1,307	265	20.275
One partner adventitiously deaf; the other adventitiously deaf or hearing	2,433	56	2.301
Total	3,740	321	8.583

The principal question of this chapter, then, must be answered in the affirmative. Marriages of the congenitally deaf are far more liable to result in deaf offspring than marriages of the adventitiously deaf.

This conclusion is in accordance with the generally accepted law of heredity that congenital or innate characteristics are far more likely to be transmitted to the offspring than acquired characteristics. Indeed, some of the most eminent hereditarians believe that acquired characteristics are never transmitted. In the case of deafness reappearing in the offspring, if we fall into the common error of regarding deafness as the characteristic transmitted, we must conclude at once that an acquired characteristic may be

transmitted; for, as is shown by Tables XXVII and XXVIII, a certain percentage of the marriages of the adventitiously deaf with one another—small, it is true, in comparison with that of the marriages of the congenitally deaf (Tables XXV and XXVI), but much larger than that of marriages in which both of the partners are hearing persons—result in deaf offspring. But when we remember that what is transmitted is not really deafness, but some physical anomaly or tendency to disease of which deafness is but the consequence or the symptom, and that this anomaly or tendency may have been congenital in the parent though deafness did not occur until some later period in life, we see that, even where marriages of adventitiously deaf persons result in deaf offspring, it is possible that the characteristic transmitted may really be a congenital and not an acquired one. This is an interesting topic, but to inquire into it further at present would draw us too far away from the main subject under consideration.

Although the percentage of marriages resulting in deaf offspring and of deaf children born therefrom, as shown by Tables XXIII and XXIV, is much higher where both of the partners were congenitally deaf than where one of them was congenitally deaf and the other a hearing person, it does not appear that this higher percentage is chiefly due, as has been assumed by some writers, to an intensification of the liability to deaf offspring caused by the union of "like with like." It seems rather to be due to the fact that, where both of the partners were congenitally deaf, there were two persons instead of one liable to transmit the physical condition that results in deafness. This is still more apparent from the following table, which shows the number of congenitally deaf persons married for a year or longer to congenitally deaf and to hearing partners respectively, of whose marriages the results are reported, the number of deaf children born from these marriages, and the number born to every 100 congenitally deaf married persons in each class of marriage:

TABLE XXXIII.

Congenitally deaf persons married to congenitally deaf partners or to hearing partners.	Number of congenitally deaf married persons.	Deaf children.	
		Number.	Number born to every 100 congenitally deaf married persons.
Congenitally deaf persons married to congenitally deaf partners	655	202	30.839
Congenitally deaf persons married to hearing partners	184	63	34.239
Total*	831	265	31.889

If the 655 congenitally deaf persons who married congenitally deaf partners had married hearing partners instead, and if the proportion of deaf children born from such marriages had been as large as it was in the case of the 184 congenitally deaf persons who did marry hearing partners, the number of deaf children born would have been 224 instead of 202. There seems, therefore, even in the marriages in which both of the partners were congenitally deaf, to have been no intensification of the liability to deaf offspring caused by the union of "like with like."

This result is contrary to the opinion that has been expressed by some distinguished investigators who have considered the subject. In 1868, Dr. W. W. Turner, ex-Principal of the American School at Hartford for the Deaf, applying to marriages of the deaf certain deductions drawn from experiments in the breeding of domestic animals, concluded that the tendency to the inheritance of deafness by the offspring was greatly intensified when congenitally deaf persons married congenitally deaf partners. "It is a well-known fact as regards domestic animals," he said, "that certain unusual variations of form or

*Eight congenitally deaf persons were married both to congenitally deaf and to hearing partners.

color which sometimes occur among their offspring may, by a careful selection of others similar, and by a continued breeding of like with like, be rendered permanent, so as to constitute a distinct variety, as in the case of horses, sheep, and swine. The same course adopted and pursued in the human race would, undoubtedly, lead to the same result. * * * If a person born deaf marry one who was not, there is a probability that there may be a deaf-mute among their children. * * * The amount of deafness transmitted in such cases is so small that interference can hardly be justified. But if two congenitally deaf-mutes intermarry and have children, the probability that there will be congenital deafness among them becomes so great * * * that every consideration of philanthropy, as well as the interests of congenitally deaf persons themselves, should induce their teachers and friends to urge upon them the impropriety of such intermarriages."*

Dr. Turner's views attracted little attention at the time, but their citation with approval in the ninth edition of the Encyclopædia Britannica† doubtless had considerable influence upon public opinion. Still wider publicity and greater prominence were given them a few years later by their adoption and promulgation by Dr. Alexander Graham Bell.‡ Dr. Bell laid special emphasis upon the more remote results which he believed would follow marriages in which both of the partners were congenitally deaf, formulating the theory thus: "If the laws of heredity that are known to hold in the case of animals also apply to man, the intermarriage of congenital deaf-mutes through a num-

* W. W. Turner, "Hereditary Deafness," in "Proceedings of the First Conference of Principals of American Schools for the Deaf," Washington, 1868, pp. 91–96.

† A. Large, "Deaf and Dumb," in "Encyclopædia Britannica," ninth edition, vol. vii, pp. 6 and 7.

‡ A. G. Bell, "Memoir upon the Formation of a Deaf Variety of the Human Race," in "Memoirs of the National Academy of Sciences," Washington, 1884, vol. ii, pp. 177–262. Reprinted separately, Washington, 1884.

ber of successive generations should result in the formation of a deaf variety of the human race."* The theory as thus formulated has been accepted by such eminent men of science as Francis Galton in England,† Alphonse de Candolle in Switzerland,‡ and Professors Edward D. Cope, Alpheus Hyatt, H. P. Bowditch, William H. Brewer, Simon Newcomb, and W. K. Brooks in America.§

We cannot doubt that "the laws of heredity that are known to hold in the case of animals also apply to man," and we cannot believe that the deaf in this respect are an exception to mankind in general. But since it appears from this large body of statistics that the proportion of deaf children to deaf persons married is not greater where both of the partners were deaf, nor even where both of them were congenitally deaf, than where one of them was a hearing person,‖ it follows that either there

* *Ibid.*, p. 180; Reprint, p. 4.

† F. Galton, "Hereditary Deafness," in "Nature," London, 1885, vol. xxxi, pp. 269, 270.

‡ A. de Candolle, "Sur la Production par Sélection aux États-Unis d'une Race de Sourds-Muets, d'après M. Alex. Graham Bell," in "Archives des Sciences physiques et naturelles," Geneva, 1886, vol. xv, pp. 50–64. Reprinted separately, Geneva, 1886.

§ "Scientific Testimony," in "Facts and Opinions relating to the Deaf from America," London, 1881, pp. 89–106. Reprinted in "Appendix to the Report of the Royal Commission on the Blind, the Deaf and Dumb," etc., London, 1889, vol. ii, pp. 319–324, and in "Education of Deaf Children," Washington, 1892, part ii, pp. 101–106.

‖ It will probably surprise persons who have not analyzed Dr. Turner's statistics carefully to learn that those statistics, like these, showed a larger proportion of deaf children to deaf persons who married hearing partners, and even to congenitally deaf persons who married hearing partners, than to those who married deaf partners. Dr. Turner evidently did not perceive this fact, but Dr. Bell perceived it and commented upon it. "In the case of the American Asylum," Dr. Bell says, "it appears that the pupils who married hearing persons had a larger proportion of deaf children than those who married deaf-mutes," and "even in the case of the congenitally deaf pupils of the American Asylum it appears that those who married hearing persons had a larger proportion of deaf offspring than those who married deaf-mutes" ("Memoir," etc., Reprint, p. 24). Dr. Bell (*Ibid.*, p. 25) made an analysis of these and other cases,

must be some exceptions to the general law of heredity that the tendency to the transmission of characteristics is intensified by the union of "like with like," or else that there must be some fallacy in the application of this law to the marriages of the deaf.

That any congenital characteristic is more likely to be transmitted to the offspring when it exists in both parents than when it exists in only one parent is doubtless generally true, but it is not invariably the rule. Darwin gives several examples in which peculiarities belonging to both parents "fail to be inherited, apparently from the force of heredity being too strong,"* and says that, "contrary to the common opinion, it is often sufficient for the inheritance of some peculiar character that one parent alone should possess it."† Mr. W. Sedgwick, in commenting upon some statistics showing that marriages in which both of the parents were deaf seldom resulted in deaf offspring, suggests that it may be owing to "excess having reversed the action of some natural law in development;"‡ and Ribot, the eminent French authority on heredity, quoting Mr. Sedgwick's suggestion without expressing dissent, says: "Many physiologists have thought that when both parents present the same characteristics heredity may acquire such power as to destroy itself."§ Darwin also cites Mr. Sedgwick's remark, but wisely adds that "it is

as searching and exhaustive as the data at his command permitted, and, in view of the large proportion of deaf offspring resulting from marriages in which one of the partners was a hearing person, suggested the explanation, which will be considered in a future chapter, that in a majority of these marriages the deaf partner was probably congenitally deaf, and the hearing partner probably belonged to a family containing deaf persons.

* C. R. DARWIN, "The Variation of Animals and Plants under Domestication," New York, 1868, vol. ii. p. 33.

† *Ibid.*, p. 39.

‡ W. SEDGWICK, "On Sexual Limitation in Hereditary Disease," in "British and Foreign Medico-Chirurgical Review," London, 1861, vol. xxviii, p. 204.

§ T. RIBOT, "Heredity: a Psychological Study of its Phenomena, Laws, Causes, and Consequences," New York, 1875, p. 212.

safer in the present state of our knowledge to look at the whole case as simply unintelligible."*

The present statistics, which include a much larger number of cases than Mr. Sedgwick had before him, do not corroborate the view suggested by him; for while they show a smaller percentage of deaf offspring to deaf married persons, and even to congenitally deaf married persons, in marriages in which both of the partners were deaf than in those in which one of them was a hearing person, the large number of marriages in which both of the partners were congenitally deaf that resulted in deaf offspring indicate that heredity in such cases does not "acquire such power as to destroy itself." On the other hand, Darwin's statement that, "contrary to the common opinion, it is often sufficient for the inheritance of some peculiar character that one parent alone should possess it," is corroborated by these statistics.

The fallacy in applying to marriages of the deaf the law of heredity concerning the results of the union of "like with like" lies, I believe, not in the direction suggested by Mr. Sedgwick, but in the erroneous assumption, made by nearly all the writers who have discussed this subject, that, when the deafness of the parent reappears in the offspring, deafness is the characteristic transmitted. As has already been stated, what is really transmitted is not deafness, but some anomaly of the auditory organs or of the nervous system, or the tendency to some disease, of which deafness is but the result or the symptom. These anomalies and diseases, of which deafness is the result or the symptom, are many and various. "Hereditary deafness in some of its aspects is like hereditary cough; both are the result of a great number of possible physical states."† "Deafness no more implies one defect or

* C. R. Darwin, "The Variation of Animals and Plants under Domestication," New York, 1868, vol. ii, p. 34.

† W. G. Jenkins, "Heredity in its Relation to Deafness," in "American Annals of the Deaf," Washington, 1891, vol. xxxvi, p. 104.

disease than cough or jaundice does. The cough may be due to bronchitis or phthisis, the jaundice to cancer or gall-stones. * * * Congenital deafness * * * is due not to one, but to many different and unconnected pathological conditions."* Now, if a person who is deaf from one anomaly or disease of the auditory organs, or of the nervous system, marries a partner who is deaf from some different and unconnected pathological condition, the law of heredity under consideration should not lead us to expect any intensification of the liability to transmit the defect, for the characteristics existing in the two partners are not the same. Although both partners are deaf, their marriage is not a union of "like with like" from a physiological point of view, and the law does not apply to their case. On the other hand, where the physical condition that results in deafness is the same in both partners—as, for instance, it probably is in a class of marriages of which these records furnish some examples, which will be considered in a future chapter, viz., consanguineous marriages of deaf persons—we should expect the liability to deaf offspring to be intensified by their union; but marriages of this kind are probably less numerous than those in which the physical conditions of the partners are different.

It appears from the following table that in marriages of the adventitiously deaf, also, the proportion of deaf offspring to the number of deaf married persons is less where both of the partners were adventitiously deaf than where one of them was adventitiously deaf and the other a hearing person. The disparity in the percentage of deaf children born from the two classes of marriages of adventitiously deaf persons, however, is far greater than that from the two classes of marriages of congenitally deaf persons. The table shows the number of adven-

*J. K. Love, "Deaf-Mutism, a Clinical and Pathological Study," Glasgow, 1896, pp. 101, 103.

titiously deaf persons married for a year or longer to adventitiously deaf and to hearing partners respectively, of whose marriages the results are reported, the number of deaf children born from these marriages, and the number born to every 100 adventitiously deaf married persons in each class of marriage:

TABLE XXXIV.

Adventitiously deaf persons married to adventitiously deaf partners or to hearing partners.	Number of adventitiously deaf married persons.	Deaf children.	
		Number.	Number born to every 100 adventitiously deaf married persons.
Adventitiously deaf persons married to adventitiously deaf partners	1,656	40	2.415
Adventitiously deaf persons married to hearing partners	305	16	5.246
Total*	1,946	56	2.877

If the 1,656 adventitiously deaf persons who married adventitiously deaf partners had married hearing partners instead, and if the proportion of deaf children born from such marriages had been as large as it was in the case of the 305 adventitiously deaf persons who did marry hearing partners, the number of deaf children born would have been 86 instead of 40.

If the explanation above suggested of the fallacy underlying the theory of an intensified liability to "hereditary deafness," supposed to be caused by the union of "like with like," is correct, we see why the percentage of deaf offspring to deaf married persons should not be very much greater in marriages in which both of the partners are deaf than in those in which one of them is deaf and the other a hearing person; but why should the percentage

*Fifteen adventitiously deaf persons were married both to adventitiously deaf and to hearing partners.

be, as it is in the case of the adventitiously deaf and of the deaf taken as a whole, very much less? This question will be considered in a future chapter, after we have examined some other and entirely different classifications of the deaf.

E. A. F.

[TO BE CONTINUED.]

THE SECOND YEAR'S WORK.—II.*

2. NUMBER.†

THE first work of the year must of course be a thorough review of all that you taught last year. If you did not finish all the work laid out in the article on "The First Year's Work," and it is very probable that you did not do half of it, you will of course finish what you left undone.‡ Do not be discouraged if that takes you the greater part of this year.

Gradually increase the size of the numbers you work with until you get to twenty, working in exactly the same way that you did with the larger numbers. After reaching twenty as a limit for the sum of additions, and the

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* Continued from the April number of the *Annals*, page 146.

† I wish to repeat the statement, made at the beginning of this series of articles, that I make no claim for originality in them, but am indebted to many teachers for the ideas. Original methods are to be viewed with caution until tried by long practice in the school-room.

These articles are written from notes, made with no thought of publication, for talks, extending over some years, to normal classes of actual teachers. No record of the sources of the ideas was kept. The cards and tables here given were suggested to me by a Hartford teacher more than twenty years ago, and doubtless originated with Mr. Storrs. I have also received many valuable suggestions from Mr. Booth, of Philadelphia, and no one could teach under Dr. Peet for years without absorbing ideas from him.

Very similar tables were published in the *Annals*, vol. xxiv, pp. 4 and 6.

‡ See the *Annals*, vol. xl, pp. 137–145.

largest number used in subtraction, you may begin mental arithmetic.

Have your class sit near your slate, and you write out the problems. Be sure they understand the language. Tell them to *think* the answers. At first they cannot do this, partly because they do not understand exactly what you require them to do, and partly because they cannot, as yet, perform the operations without some aid from visible illustrations. Help them at first, using toothpicks, etc., or by drawing the illustrations of a number of problems yourself, or letting one of them do so. Give them the same problems next day, and others very much like them, and gradually lead them to think out the problems for themselves.

After this you must spell problems to them, and have them solved mentally. You will at first be compelled to spell very slowly and repeat often. You may even have to act out the problem as you spell it, thus:

Give a boy three counters. Have him stand before the class, and you spell: "A boy has three cents." (Let him show them.) "His brother gives him two cents." (Giving him two counters.) "How many has he?"

After some practice in this way, get them to answer very easy questions without the illustration. Then gradually increase the difficulty of your problems. Some teachers give too much attention to the idea of a separate ten, in numbers between ten and twenty. Of course, logically, we can say that fifteen is one ten and five, just as we say that seventy-five is seven tens and five; but we can teach our children to realize clearly how many units there are in fifteen without separating the ten, which we can hardly do with seventy-five. We must, for rapid work, teach them to add and subtract between ten and twenty, just as they did under ten. I should, therefore, illustrate these examples in exactly the same way, and not as we shall illustrate "carrying" after a while.

After the pupils begin to show considerable ability in solving mental problems, it will be time for us to begin to substitute the *memory* of different combinations in addition and subtraction for the *reasoning* we have been doing. The reasoning is necessary at first; but afterwards the operations are performed by memory alone, and the elementary combinations should suggest their results as quickly as combinations of letters suggest their sounds to those who read. We see the letters i t, and think "it" at once. In a similar way our pupils should see the figures 3 and 4, and think "seven." Rapid adders go farther and think at once the sums of combinations of three, four, or even more figures; but, in addition, certainty, with moderate speed, is better than the greatest speed with the least bit of uncertainty. In these days a boy frequently leaves school without the ability to add a column of figures of any length with either rapidity or certainty. We wish all of our pupils to have this ability, and must begin now to lay the foundation on which it is to be built.

Questions in psychology may seem out of place in teaching a class of deaf beginners, and yet with them, more than with any other class of children, these questions constantly occur. Other children have their "concepts" and modes of thought in elementary knowledge fully formed before they go to school. It is not so with the deaf child. He is dependent on the teaching he receives, not only for what he thinks, but for how he thinks. We now have before us the very important task of giving to our children a mode of thinking in addition. This question does not seem to have received, from teachers of the deaf, the consideration which its importance demands.

Probably different minds act in different ways. For my own part, the fundamental operation of my mind in adding is the memory of the sound of the old addition tables, drilled into me by a stately old lady in a lace cap; and were I to think "three and three are five," I could almost

feel the thump of her ruler which surely followed such a mistake. What are our pupils to have in place of this memory of sound, which we can never give them? Shall we try to give them a printed, written, or spelled expression? Shall it be "three and four are seven," or "3 and 4 are 7"? All the combinations in addition and subtraction, thus written or spelled out, form a great bulk to be exactly and quickly remembered; and the drill must be constant and long continued that will so impress it that almost without any effort, certainly without an effort taking any appreciable time, the desired result will come exactly. The same objections apply to $3 + 4 = 7$, and

$$\begin{array}{r} 3 \\ 4 \\ \hline 7 \end{array}.$$

Shall we drill our pupils to think of two hands, one making the sign "3" and the other "4," and the result "7" on another imaginary hand? These questions are important, and on a proper answer to them the progress of this class will depend to a great extent. Think the matter over carefully, decide it for yourself, and then make your drill in the method you decide upon very thorough and persistent. Drill by this one method till all the combinations in addition and subtraction are remembered almost instantly. Do this if it takes all the time you can devote to number-work for the next three years.

A plan that I have found successful, but which I am not prepared to say is perfectly satisfactory, is to prepare a table of all the numbers from 3 to 18, giving all the combinations of two figures which will make each number.

1	3	2	1 2	4	3 2	1 2	5	4 3	1 2 3	6	5 4 3
1 2 3	7	6 5 4	1 2 3 4	8	7 6 5 4	1 2 3 4	9	8 7 6 5	1 2 3 4 5	10	9 8 7 6 5
2 3 4 5	11	9 8 7 6	3 4 5 6	12	9 8 7 6	4 5 6	13	9 8 7	5 6 7	14	9 8 7
6 7	15	9 8	7 8	16	9 8	8	17	9	9	18	9

When you begin to develop this table, have each square drawn on a card ten or twelve inches square. Devote considerable time, at least two days, to each of these cards, practising on all the combinations on it. Explain that the opposite small figures added produce the large number in the middle, and the small numbers on either side subtracted from the large one in the middle leave the opposite small numbers.

After you have explained each card, and practised on it long enough to be sure that the children understand how to use it, hang it on the wall; and when you have finished with all of them replace them by a table large enough to be easily read from any part of the room. Have your pupils copy this occasionally, and refer to it constantly, especially when you have to correct a mistake. I believe that in time each pupil will have a mental picture of this table impressed upon his mind so firmly and clearly that all operations in addition and subtraction will be done instantly, by seeing it mentally.

To review this work take one of your cards which you used in building up the table to the opposite end of the room, so that the pupils cannot see the table. Cover part of the card and let them tell what the covered part is.

If you do not care to adopt this plan—which, by having the whole subject constantly in sight and often referred to, teaches a great deal without labor—be sure that you do have some plan which will give your children a clear, short, mental conception. Do not, for some time yet, attempt to form combinations above twenty.

Gradually introduce your pupils to examples in multiplication and division. Begin by very simple examples, and at first allow these to be done by addition and subtraction. Illustrate often by drawings, and by actually acting out problems. Do not think that any great skill in drawing is needed, either by you or your pupils, in making these illustrations. The drawings given in these articles are purposely made in such a manner that any one can imitate them with great rapidity. Tell the pupils for what you intend the first one, and their imagination will supply all the details that lack of skill or time prevents you from giving.

I give a few examples in multiplication and division, and different methods of explaining them.

1. One orange costs three cents. What do three oranges cost?

Select any three convenient things, and tell your class that you will pretend that they are oranges. Call up a pupil. Let him pay you three counters of any kind, representing the three cents, and take one of the oranges, pointing to the words "One orange costs three cents." Sell him another, and another, in the same way. Point to the words "three oranges," and let him show them. Point to the question "What do three oranges cost?" and show the handful of counters you have accumulated, but in such a way that they cannot see how many there are. Ask them to tell you. If they cannot do so, let one of them count them. Write "Three times three are nine."

Or the three pretended oranges may be placed on the table with three cents opposite each. After the children

have seen that the arrangement is correct, and you have pointed out the words as above, and the things that represent them, sweep up the pennies and ask how many you have.

Or draw the three oranges, and three cents under each:

Three oranges.

One orange.	One orange.	One orange.
O	O	O
Three cents.	Three cents.	Three cents.
ooo	ooo	ooo

Ask how many cents, and, as you do so, rub out the pictured ones.

Allow them, at first, to work out these examples by counting on their fingers, or with marks or counters, but gradually accustom them to do without such aids.

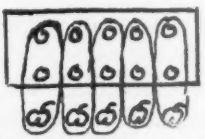
2. One apple costs two cents. How many apples can I buy for ten cents?

Let a pupil count out ten cents, and buy pretended apples at two cents each, putting each apple out of sight as soon as he pays his two cents. Then ask how many he has.

Or lay the ten cents on the table and make separate piles of two cents each, putting an apple opposite each pile. Or take two cents from the ten cents and put down an apple. Repeat till the money is all gone.

Or illustrate it thus:

Ten cents



Do not always have the division exact in these examples. Let there be a remainder, and say you have so many cents left. They are not enough to buy another apple, so you have to keep them. Your children will readily understand this.

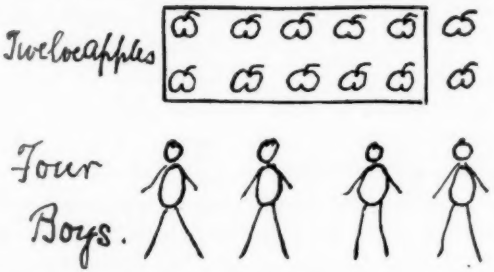
3. I give twelve apples to four boys. How many apples do I give to each?

It is somewhat harder to illustrate examples of this sort.

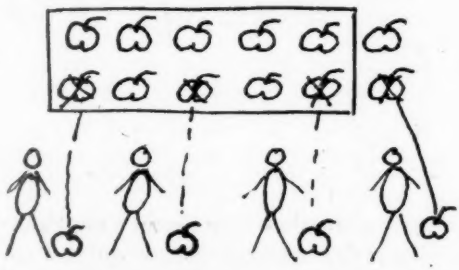
Have twelve apples, or twelve things to represent them. Call up four boys. Give the apples, one at a time, in rotation to the boys, as children often divide things. Have the boys put them out of sight as fast as they get them. Then ask how many each boy has.

Or you can let the pupil make the apples into four equal piles, and ask how many in each.

Or draw a picture of twelve apples and four boys, thus:



Cross out an apple for each boy, and draw a line from it down to the boy, putting the apple there:



Repeat the operation till the apples are all gone. Have a pupil count how many each boy has, and notice that each has the same number.

After long practice on many examples by these methods, using first one and then the other, and always being sure that your pupils understand every example, you may

begin to accustom them to mental operations, and gradually drop concrete numbers for abstract; but work a long time before you take up figures. The questions in Colburn's Arithmetic, excluding the figures, and simplifying the language in many places, can be used. Spell these pretty rapidly. If not understood, spell them slowly, making the class spell with you. If they do not get them then, write on the board, and, if they are still unable to solve them, have one of the pupils illustrate, or do it yourself, as shown above.

The same difficulty that we met with in addition and subtraction comes up here again. We must select some form of the different combinations of multiplication and division for the children to remember. Our cards can easily be extended to this. In the addition and subtraction cards, we put a large number in the middle, and smaller ones at the sides, and explained that adding a small number to the small number opposite it gave the large number, etc. If we follow exactly the same arrangement for multiplication and division, there will be danger of confounding the two tables. Let us, therefore, take the corners of the cards for the factors, as we have already used the sides for another purpose. Our cards will be made like these.

Explain that a number in a corner multiplied by the one in the diagonally opposite corner will always give the large number in the middle, and that the middle number divided by one in a corner gives the number in the opposite corner. Deaf children will catch these ideas very quickly, and some time in the future you will find them refreshing their memories by making small drawings of these cards. When you give them a new card, practise

on it for a while, and then hang it up permanently, reviewing it occasionally, as you did the cards for addition and subtraction. Your multiplication and addition table, when finished, should look like this.

2 4 2	2 6 3	2 8 4	3 9 3	2 10 5	2 3 12 4 6
2 14 7	3 15 5	2 4 16 4 8	2 6 18 3 9	4 20 5	3 21 7
3 4 24 6 8	5 25 5	3 27 9	4 28 7	5 30 6	4 32 8
5 35 7	6 4 36 9 6	5 40 8	6 42 7	5 45 9	6 48 8
7 49 7	6 54 9	7 56 8	7 63 9	8 64 8	8 72 9
9 81 9					

You will not, except under very favorable circumstances, be able to accomplish, in the first two years of school life, all of the number work given in this and the former article. It has been done by an enthusiastic and skilful teacher, with a small class of bright pupils, all of whom were over nine years old when they began. I have not, as yet, made sufficient experiment with younger pupils to say exactly how much they ought to be able to accomplish, and have given the matter entire, as there seemed no use in dividing it unless I could say how much should be learned in the two years. I do not, however, wish to be understood as setting up this much for a young class to accomplish in two years.

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THE COMPARATIVE VALUE OF EXPRESSION AND COMPREHENSION.

In corroboration of the view expressed by Miss Fletcher in the January number of the *Annals*, that the power to read intelligently and freely, with clear insight and with breadth of thought, is of greater value to deaf pupils than that of absolutely correct expression—in other words, that the "full man" described by Lord Bacon should be the aim of instruction rather than his "exact man," provided fulness and exactness cannot both be attained—the following quotations from two recent publications outside our profession may be of interest. Professor Calvin Thomas, of the University of Michigan, says:

"There can be no doubt that language study is one of the most potent educational instruments we know anything about. How is this? Where does this value lie if not in learning to speak the language? Why, it lies in learning to read it. It lies in the deepening and broadening of the mind that come from the introduction to a new literature. It lies in the gradual working of one's way into the intellectual life of another people. It lies in the gradual taking up into one's own being of what has been thought and felt by the greatest of other lands and of other days. Or, along another line, it lies in the scientific study of the language itself, in the consequent training of the reason, of the powers of observation, comparison, and synthesis; in short, in the up-building and strengthening of the scientific intellect. There are hundreds of thousands of people in the world to-day who cannot converse at all in German, in French, in Latin, or in Greek, but whose intellectual debt to one or all of these is, nevertheless, simply inestimable. For myself I can say, with perfect sincerity, that I look upon my own ability to speak German simply as an accomplishment to which I attach

no great importance. If such a thing were possible, I would sell it for money and use the money to buy German books with, and it would not take an exorbitant price to buy it either. But, on the other hand, what I have got from my ability to read German, that is, my debt to the German genius through the German language, I would no more part with than I would part with my memories of the past, my hopes for the future, or any other integral portion of my soul."*

Professor E. H. Babbitt, of Columbia College, reinforces Professor Thomas's views with the following argument, based upon the extent of the reading vocabulary of ordinary persons as compared with the number of words they use in expressing their thoughts:

"Professor Thomas implies that a reading knowledge of a language is a key to these higher things, and that a speaking knowledge is not, but does not think it worth while, apparently, to argue the point, which he assumes as self-evident. I doubt if it is self-evident to the lay mind, and I have even got some new light on the matter recently myself from an investigation undertaken for another purpose. My attention had been called to the surprising and conflicting statements regarding the vocabulary possessed by various individuals. It has become a sort of tradition that a child or illiterate person has only a few hundred words—some have it as low as 200 or 300. Professor Harris, of Cleveland, noted the vocabulary of his child up to the age of two years and a half and found it comprised 1,099 words at that age. I tried to get at the vocabulary of adults, and made experiments, chiefly with my students, to see how many English words each knew. We know that the Bible contains about 8,000 words, and that Shakespeare, who has the largest vocabulary of all English authors, used about 18,000. The largest dictionaries contain

* Calvin Thomas, in "Methods of Teaching Modern Languages," published by D. C. Heath & Co., Boston.

about 120,000. My plan was to take a considerable number of pages from the dictionary at random, count the number of words on those pages which the subject of the experiment could define without any context, and work out a proportion to get an approximation of the entire number of words in the dictionary known. The results were surprising for two reasons. In the size of the vocabulary of such students the outside variations were less than 20 per cent., and their vocabulary was much larger than I had expected to find. The majority reported a little below 60,000 words. Now it may be that some educated men in modern days use as many words as Shakespeare in expressing their thoughts, but probably very few use anything like as many. The fact brought out by my experiments means, then, that every educated person carries a reading vocabulary of several times the number of words he uses in speaking. The same thing is undoubtedly true of people of an education inferior to that of college students—the ordinary middle-class people, whose range of reading, as well as of conversation, does not extend so far, but who, nevertheless, do read about many subjects which they do not often talk about."*

The circumstances referred to in the first extract above given are not precisely parallel with those of deaf pupils studying English, for it is the comparative value of being able to use accurately or to read freely a foreign language that Professor Thomas is speaking of, while with respect to deaf pupils it is the value of the ability to use the national language accurately that is to be compared with that of the ability to read it freely. From either point of view the national language is more important than the foreign, and the importance of the ability to express oneself correctly in the national language is relatively greater than

*E. H. Babbitt, "Common Sense in Teaching Modern Languages. An Address read before the Schoolmasters' Association of New York and vicinity, December 13, 1894."

that of the corresponding ability in a foreign language. Making due allowance for this difference between the circumstances of hearing persons studying a foreign language and deaf persons studying the national language, there is still much in Professor Thomas's argument as well as in Professor Babbitt's that is applicable to the instruction of our pupils in English.

E. A. F.

NOTICES OF PUBLICATIONS.

"DEAF-MUTISM, a Clinical and Pathological Study, by JAMES KERR LOVE, M. D., Aural Surgeon to the Glasgow Royal Infirmary, Honorary Aurist to the Glasgow Deaf and Dumb Institution, with chapters on the Education and Training of Deaf-Mutes by W. H. ADDISON, A. C. P., Principal of the Glasgow Deaf and Dumb Institution," (Glasgow, James MacLehose and Sons, 1896, 8vo, pp. 386), is the best book on the subject of which it treats that has appeared in any language. Its field is similar to that of the works of Dr. Hartmann and Dr. Mygind bearing the same general title,* but its scope is wider, its collection of statistics fuller, and the acquaintance of its authors with their subject more intimate and complete. To a clinical and pathological knowledge of deafness derived from the study of its literature and personal practice in its treatment equal to that of his predecessors, Dr. Love adds the experience of an aurist to a school for the deaf of 160 pupils, while Mr. Addison, a teacher and principal of the same school for twenty-five years, and a careful and discriminating observer of the work of other schools at home and abroad, is well qualified to speak on the subject of the education of the deaf. Much valuable matter has also been contributed by Mr. James Howard, Head-

*Dr Hartmann's book was reviewed in the *Annals*, vol. xxviii, pp. 244–247; Dr. Mygind's, vol. xl, pp. 75–77.

master of the Yorkshire Institution, and by other English teachers.

Dr. Love begins the book with an interesting report of a comparison of the physical characteristics of fifty-four deaf boys of various ages in the Glasgow Institution with hearing boys of the same ages in public schools. The results show that the average physical condition of the deaf boys was equal to that of the hearing boys. In height they were about the same, in weight and chest-measurement superior;* but their cranial circumference was generally less, a fact which is probably to be attributed to their inferior opportunity for brain development during the years of childhood before they went to school. The statements found in some books that the deaf have weaker lungs than other people owing to the non-use of their vocal organs, that they are less sensitive to pain, that they require larger doses of medicine, that they are more liable to certain diseases, etc., were not confirmed by the results of Dr. Love's investigation.

The author gives a full description of the normal anatomy and functions of the ear, and of its morbid anatomy so far as this has been ascertained by post-mortem examinations. With respect to the causes of deafness, he concludes that adventitious deafness "is usually due to disease of the internal ear, which has spread by the middle ear and caused inflammatory changes involving de-

* Concurrent with this testimony is that recently given by Mr. R. O. Johnson, Superintendent of the Indiana Institution. In his fifth paper on "Deaf-Mutes and their Education," in the *Inland Educator* for April, 1896, page 133, he says: "The clothier who manufactures the uniforms worn by the boys testifies that after measuring thousands of boys he finds the deaf to be of stouter and stronger build than the average hearing and speaking school-boys of corresponding ages. What is true of the boys is also true of the girls." We do not suppose there is anything in deafness to increase the size and weight; the superior physical condition of the pupils of the Glasgow and Indiana schools, as compared with that of hearing boys of the same age, is doubtless due to their more healthful food, more regular hours, and better environment in general.

struction of the membranous labyrinth and of the nerve structures which it supports. In a smaller number of cases the danger approaches from the side of the brain, and more rarely the damage to the inner ear is due to a primary labyrinthitis. In congenital deafness the changes on which the deafness depends are not essentially different from those described above, except in the cases which depend on arrest of development and malformation. They consist of obliteration of the normal nervous structures by inflammatory new-formations—chiefly osseous. It is not possible to estimate the proportion of cases due to malformation, but it is undoubtedly smaller than was formerly supposed. After a series of years it cannot be decided in many cases whether a given structure has never existed or has been obliterated."

With regard to the cure of deafness, speaking of former attempts in this direction, he says: "We cannot afford to indulge too much in condemnation of older methods. We know most of them to be useless, sometimes hurtful, hardly ever rational or scientific. But modern treatment gives no brilliant results. We cannot cure deaf-mutism now, in the sense of a radical cure, any more than they could in the seventeenth century. And what is more, the clear light of recent pathological research tells us that in most cases we had better not try." But he believes that medical skill can do much in a preventive way by the proper treatment of the diseases that often produce deafness, such as scarlet fever and measles, by the removal of adenoid growths in the naso-pharynx and of enlarged tonsils, and by the prompt treatment of disease of the middle ear, both suppurative and non-suppurative.

Dr. Love gives many interesting statistics with respect to marriages of the deaf and consanguineous marriages, both of which he regards as liable to result in deaf offspring. With respect to the possibility of "the formation of a deaf variety of the human race," while he admits

that such a result "is quite what a study of heredity would lead us to expect," he believes that "there are certain checks at work which delay this result, and which make anything but a partial realization of Mr. Bell's prediction impossible."

In the chapters on the education and training of the deaf, Mr. Addison sketches the history of deaf-mute education; describes the physical, mental, and moral condition of the uneducated; explains the oral and manual methods and the combined system of instruction, and their respective results; shows the present state and future prospects of education in Great Britain, and gives statistics of the employments of the adult deaf, and a brief summary of their legal status. In treating of educational methods, he writes not as a partisan, but as a candid inquirer and judicious critic, explaining the various methods clearly, and setting forth the advantages and disadvantages of each. The conclusion at which he arrives—and Dr. Love, studying the deaf from the clinical point of view, reaches the same conclusion—is that no one method will suffice for all the deaf, but that the case of each child must be treated on its merits. They would give all an opportunity for oral instruction, but would not continue this method where the results seem likely to be unsatisfactory. Oral and manual instruction in separate but harmonious schools, pupils being transferred from the one to the other as might seem desirable after experiment, as is done in the Pennsylvania Institution at present, they regard as the ideal form of organization.

Dr. Love lays stress upon the value of auricular instruction wherever possible, and upon the importance of having an aurist, assisted by a surgical nurse, connected with every school, whose duty it should be to test the hearing of all children on admission, examine the organs of hearing and speech, and, as far as possible, remove any obstructions to either that may exist. He believes that 30

or 40 per cent. may be found capable of remaining in the oral school and pursuing its course successfully. Mr. Addison does not make so definite an estimate. His teachers think that a little over 50 per cent. of the pupils can be successfully taught by the oral and auricular methods; his own opinion is that the percentage is not so large, "but this is a question which only an actual test, under proper conditions, can answer."

As between day-schools and boarding-schools, Mr. Addison thinks the results of the latter are superior. "Theoretically it seems no doubt a fitting thing that the deaf child should see as much as possible of its home and mix with friends in society, but practically it is found that, more often than not, the lot of a deaf child brought up amongst hearing persons is one of terrible isolation, while the educational results of the day-school are much below those of the boarding institutions."

In one respect Mr. Addison differs widely from American teachers. He does not think it is worth while to give instruction in any industries at school, except sloyd and other similar exercises to teach boys and girls how to use their hands. He believes it is better for the pupil to devote his early years to mental training and then leave school and serve an apprenticeship to some trade. In this country, while our ideal of industrial training is not fully realized, we regard this training, with all its defects, as a valuable and even an essential part of the course of instruction, and, far from proposing to abandon it, we are constantly endeavoring to raise its standard.

"Growth of the Oral Method of Instructing the Deaf" is an address delivered by Dr. ALEXANDER GRAHAM BELL November 10, 1894, on the twenty-fifth anniversary of the opening of the Horace Mann School. It is reprinted from the Annual Report of the Committee on the Horace Mann School, School Document No. 12, 1895, making an

octavo pamphlet of 23 pages. It is distributed by the Volta Bureau.

By statistics compiled from the *Annals* Dr. Bell shows the great progress in oral teaching which has been made in the New England States and the United States since the year 1867. This is a progress in which all friends of the deaf may rejoice, though we may not all share Dr. Bell's opinion that "the oral day-school for the deaf, which is to-day in the minority in America, will in the future represent the majority of our schools." On the contrary, the present tendency seems to be to transform day-schools, when they grow into sufficient importance to attract pupils from a distance, into boarding-schools, as has been done in Pittsburgh, Providence, and Portland, and to give increased attention to oral teaching in combined-system schools, rather than to supersede boarding-schools by day-schools or combined-system schools by exclusively oral schools.

Dr. Bell has also published a folio sheet entitled "Methods of Instructing the Deaf in the United States. Statistics compiled from the *American Annals of the Deaf*, March, 1896."

It appears from the figures presented and the accompanying graphical chart that the oral method has been rapidly gaining, and the combined system correspondingly losing, ground in the United States since the year 1891. This is due to the fact that Dr. Bell gives to the term "combined system" a narrower meaning than that in which it is usually employed in America, excluding from this classification the large number of pupils who are taught by the oral and auricular methods in combined-system schools, and who, as the term is defined in the *Annals*, from which Dr. Bell's statistics are derived, and as it is understood by the heads of the schools who furnished those statistics and under whose direction the pupils in question are instructed, and by the profession

generally, are regarded as receiving their education under the combined system.

"Two Deaf Girls, a Few Extracts from the Diary of Miss JULIA A. FOLEY" (the Pennsylvania Institution Print, 1896, 8vo, pp. 15) is an entertaining, suggestive, and profitable description of the progress in language and in mental development during the first year of instruction of two children who, when admitted to school, seemed "about as stupid as it is possible for deaf-mutes to be." They proved during the year to have remarkably acute minds in some directions, though their standing as scholars did not rise high. This was ten years ago. It would be interesting to know what progress they have made since that time.

The "Proceedings of the Fourteenth Convention of American Instructors of the Deaf, held at the Michigan School for the Deaf, Flint, Mich., July 2, 3, 4, 5, 6, 7, and 8, 1895," have been published at the Michigan School, making an octavo volume of 508 pages, besides several inserted sheets. The members of the Convention are placed under additional obligation to the authorities of the Michigan School for the promptness and excellence with which the proceedings have been printed, and especially to Mr. Thomas P. Clarke, who, as Secretary, had the arduous duty of arranging them for publication and supervising the work.

In the last number of the *Annals* it was mentioned that the price of the Proceedings to non-members of the Convention was one dollar; we have since been informed that 14 cents should be added for postage.

The "Souvenir of the Golden Wedding Celebration of Rev. Dr. and Mrs. Thomas Gallaudet at the New York

Institution for the Instruction of the Deaf and Dumb, July 15, 1895" (published at the New York Institution, 1895, pp. 48), is a handsomely printed memento of the occasion, giving in full the proceedings and other matters of interest relating thereto. Portraits of Dr. and Mrs. Gallaudet add to its value.

E. A. F.

SCHOOL ITEMS.

Cleveland School.—Miss Katie Schenck, of Columbus, Ohio, has been appointed articulation teacher.

Gallaudet College.—On Presentation Day, May 6, 1896, Miss Bertha Block, Messrs. G. F. Grimm, H. S. Lewis, H. C. Merrill, A. H. Sessoms, A. J. Sullivan, and Miss Laura McDill, members of the senior class, were presented as candidates for the degree of Bachelor of Arts, and Messrs. E. P. Clarke, B. Ph., A. C. Gaw, B. A., and T. M. Barbee, B. A., members of the normal class, as candidates for the degree of Master of Arts. Miss May Greener and Mr. J. N. Banerji, members of the normal class, were presented as candidates for a normal diploma. The announcement was made of the conferring of the degree of Master of Arts in course upon Mr. Paul Lange, B. A., Principal of the Evansville School for the Deaf, and the Rev. C. O. Dantzer, B. A., a clergyman of the Episcopal Church, and the honorary degree of Master of Arts upon Mr. G. M. McClure, an instructor in the Kentucky School. Besides the dissertations and orations of candidates for degrees, an oration was delivered by Mr. Paul Lange, and there were addresses by Mr. J. N. Banerji, Headmaster of the Calcutta School, Sir Julian Pauncefote, Ambassador of Great Britain to the United States, and the Rev. Dr. B. L. Whitman, President of Columbian University.

Kentucky School.—Mr. John H. Yeager, a teacher for the past twenty years, died April 4, 1896, aged 53, of inflammation of the stomach and bowels. Mr. Yeager was educated in this school, and married another of its graduates, Miss Annie Herndon, who, with four children, survives him. The *Standard* says of

him that "as a teacher Mr. Yeager was thoroughly devoted to his work, was industrious, painstaking, and thorough, and therefore very successful."

Mississippi Institution.—The Governor of the State has declined to accept Mr. Dobyns's resignation, and in deference to urgent appeals from the Board of Trustees and other prominent citizens Mr. Dobyns has decided to remain, thus, as he says in a letter to the Board of Managers of the Missouri School, sacrificing ambition to the stronger prompting of duty.

New York Institution.—The seventy-sixth annual report, the entire edition of which was destroyed by the fire of last year, has been reprinted in connection with the seventy-seventh report. The two reports make a volume of 204 octavo pages, besides many insets of illustrations. In the seventy-seventh report Mr. Currier expresses complete satisfaction with the results of the "rotary" plan of instruction as compared with the former single-class method.

New York Institution for Improved Instruction.—Mr. H. F. Mitchell, C. E., who has been connected with the school for many years, has been appointed special instructor in physics, chemistry, and mechanical drawing in the place of Mr. D. L. Elmendorf. Miss Alice Gregg has been added to the staff of teachers.

Pennsylvania Institution.—Miss Sutton resigned her position as teacher at the end of March to engage in literary work. Mr. J. A. McIlvaine, a graduate of Gallaudet College, was appointed to supply her place for the remainder of the school year.

Mr. John P. Walker, an experienced teacher of the Manual Department, has been appointed Principal of Morris Industrial Hall. This is a new office, created in order to give increased value to the Industrial Department.

Dr. Crouter has issued a circular, dated May 4, giving full particulars of railway and other arrangements for the Fifth Summer Meeting of the American Association to Promote the Teaching of Speech to the Deaf, to be held at this Institution July 1 to 10, inclusive. The circular, and any further information desired concerning the arrangements for the meeting, can

be obtained by applying to Dr. A. L. E. Crouter, Superintendent of the Institution for the Deaf and Dumb, Mt. Airy, Philadelphia, Pa.

Utah School.—The School will be moved to Ogden during the coming summer, and will have as its home the buildings and grounds occupied up to the present time by the State Industrial School. The last legislature made ample financial provision for its support, and a full corps of experienced teachers have been selected for next year. A department for the blind is to be added.

ADVERTISEMENTS.

A GENTLEMAN, teacher of articulation, desires a position. He has a thorough knowledge of book, job, and newspaper printing, and editorial work, with experience in city offices, and could, if desired, take charge of the printing or assist in principal's office. Address "A," care of the Editor of the *Annals*, Kendall Green, Washington, D. C.

WANTED, a Kindergarten or Primary position by a young lady who has had experience in an Institution for the Deaf. Address "X," care of R. O. Johnson, Superintendent Indiana Institution for the Deaf, Indianapolis, Indiana.

A SEMI-MUTE, having lost his hearing at the age of seven years, and a graduate of Gallaudet College, of several years experience in teaching, wishes to re-enter the profession. Best references. Address X. Y. Z., care of the Editor of the *Annals*, Kendall Green, Washington, D. C.

ARNOLD'S MANUAL. An additional supply of Vol. I just received from the publishers by the Volta Bureau. Price, $2.15 delivered. John Hitz, Superintendent.

OLOF HANSON, Architect, Theopold Block, Faribault, Minn. Schools, Residences, Public Buildings. Correspondence solicited.

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The American Annals of the Deaf is published six times a year, appearing in the months of January, February, April, June, October, and November. The subscription price is $3.00 a year, payable in advance. For Great Britain and Ireland the price, postage included, is 13 shillings; for Germany, 13 marks; for France, 16 francs, all which may be sent through the postal money-order office. Subscriptions and all other communications relating to the *Annals* should be addressed to the Editor,

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